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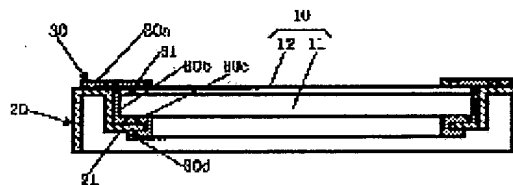
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## (54) MOUNTING STRUCTURE OF PANEL

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a mounting structure of a panel permitting to easily replace the panel and realize a thinner type of a device.

SOLUTION: The mounting structure of this panel comprises a cover member 20 with an opening part formed, a panel holding member 30 which is supported in the opening part of the cover member 20 and holds a panel 10, and the cover member 20 is provided with a flange part 21 on the inner wall of the opening part, and the panel holding member 30 is made of an elastic material and has a latching part 30d to be latched by the flange part 21 of the cover member 20, and a holding member 31 for holding the outer peripheral part of the panel 10 in-between.



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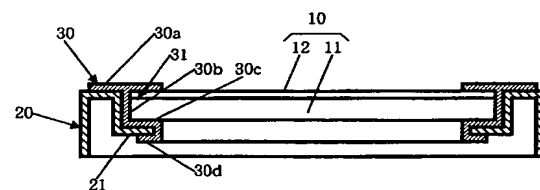
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(54)【発明の名称】 パネルの取付構造

(57)【要約】

【課題】 パネルを容易に交換することができ、装置の薄型化を実現できるパネルの取付構造を提供する。

【解決手段】 本発明のパネルの取付構造は、開口部20aが形成されたカバー部材20と、カバー部材20の開口部20a内に支持され、パネル10を保持するパネル保持部材30とを有し、カバー部材20は、開口部20aの内壁にフランジ部21が設けられ、パネル保持部材30は、弾力性のある物質で作られ、カバー部材20のフランジ部21に係止される係止部30dと、パネル10の外周部を挟持した状態で保持する保持部31とを有する。



10 パネル  
20 カバー部材  
21 フランジ部  
30 パネル保持部材  
30a 側壁部  
30b 底壁部  
30c フランジ部  
30d 係止部  
31 保持部

## 【特許請求の範囲】

【請求項 1】開口部が形成されたカバー部材と、そのカバー部材の開口部内に支持され、パネルを保持するパネル保持部材とを有し、

前記カバー部材は、その開口部の内壁にフランジ部が設けられ、

前記パネル保持部材は、弾力性のある物質で作られ、前記カバー部材のフランジ部に係止される係止部と、パネルの外周部を挟持した状態で保持する保持部とを有する、

ことを特徴とするパネルの取付構造。

【請求項 2】開口部が形成されたカバー部材と、そのカバー部材の開口部内に支持され、パネルを保持するパネル保持部材とを有し、

前記カバー部材は、その開口部の内壁にフランジ部が設けられ、

前記パネル保持部材は、弾力性のある物質で作られ、開口部を備えた枠部と、その枠部の下部の略中間部分から下方向に設けられた側壁部と、その側壁部の下部から内側方向に延びたフランジ部と、そのフランジ部の先端部から外側方向に折り曲げて形成された係止部とを有し、前記パネル保持部材の枠部の内側部分と、側壁部と、フランジ部とにより前記パネルの外周部を挟持した状態で保持するための断面略コ字状の保持部が形成され、前記パネル保持部材の側壁部と前記カバー部材の開口部の内壁とが当接され、前記パネル保持部材のフランジ部の裏面と前記カバー部材のフランジ部の表面とが当接され、かつ、パネル保持部材のフランジ部の裏面と係止部の表面との間に前記カバー部材のフランジ部の先端部を挟持して、前記パネル保持部材をカバー部材のフランジ部に係止する、

ことを特徴とするパネルの取付構造。

【請求項 3】開口部が形成されたカバー部材と、そのカバー部材の開口部内に支持され、パネルを保持するパネル保持部材とを有し、

前記カバー部材は、その開口部の内壁にフランジ部が設けられ、

前記パネル保持部材は、弾力性のある物質で作られ、パネルの外周部を挟持した状態で保持する保持部を有し、前記パネル保持部材と前記カバー部材のフランジ部とを再剥離可能な接着テープで接着する、

ことを特徴とするパネルの取付構造。

【請求項 4】開口部が形成されたカバー部材と、そのカバー部材の開口部内に支持され、パネルを保持するパネル保持部材とを有し、

前記カバー部材は、その開口部の内壁にフランジ部が設けられ、

前記パネル保持部材は、弾力性のある物質で作られ、開口部を備えた枠部と、その枠部の下部の略中間部分から下方向に設けられた側壁部と、その側壁部の下部から内

側方向に延びたフランジ部と、を有し、

前記パネル保持部材の枠部の内側部分と、側壁部と、フランジ部とにより前記パネルの外周部を挟持した状態で保持するための断面略コ字状の保持部が形成され、前記パネル保持部材のフランジ部の裏面と前記カバー部材のフランジ部の表面とを、再剥離可能な接着テープで接着する、

ことを特徴とするパネルの取付構造。

10 【請求項 5】前記パネル保持部材の枠部の外側部分の裏面と前記カバー部材の上面とが当接することを特徴とする請求項 2 又は 4 に記載のパネルの取付構造。

【請求項 6】前記パネルは、1 枚で又は複数枚を重ね合わせて構成されていることを特徴とする請求項 1 乃至 5 のいずれか 1 つの項に記載のパネルの取付構造。

【請求項 7】前記パネル保持部材は、エラストマ又はシリコンゴムで作られていることを特徴とする請求項 1 乃至 6 のいずれか 1 つの項に記載のパネルの取付構造。

## 【発明の詳細な説明】

## 【0001】

20 【発明の属する技術分野】本発明は、タッチパネルや表示パネルなどのパネルをカバーなどに取り付けるためのパネルの取付構造に関し、特に、パネルの交換を容易にし、装置の薄型化を図ることができるパネルの取付構造に関する。

## 【0002】

【従来の技術】液晶表示装置などでは、タッチパネルや表示パネルなどのパネルをカバーに取り付けるために、従来から種々の取付構造が提案されている。

30 【0003】図 4 は、従来のパネルの取付構造を示す正面断面図である。図 4 に示すように、従来のパネルの取付構造は、箱形のケース 1 と、そのケース 1 の上側開口部に嵌め合わされる枠状のカバー部材 2 とを有し、カバー部材 2 の裏面側に、隙間をあけて重ねられた表示パネル 11 とタッチパネル 12 とが取り付けられている。

【0004】表示パネル 11 は液晶やスイッチなどを内蔵しており、ある程度の厚さを有している。タッチパネル 12 は表示パネル 11 を保護するフィルム状のもので、表示パネル 11 の表面に隙間をあけて重ねられる。このような表示パネル 11 とタッチパネル 12 とは、カバー部材 2 の裏面側に配置されたフレーム 3 とカバー部材 2 とに挟持した状態で固定される。

【0005】また、液晶パネル（表示パネル）に加えられる熱的ショックや振動・衝撃などのストレスを緩和するようにした液晶表示装置が特開平 8-179283 号公報に開示されている。この特開平 8-179283 号公報に開示された液晶表示装置は、シリコンゴムなどの緩衝材からなるパネル保持部材が少なくとも液晶パネルの周縁部に形成された面取り部を押圧するように表ケース（カバー部材）の裏面に貼り付けられたことを特徴としている。

【0006】さらに、タッチパネルと液晶パネル（表示パネル）の一方だけが故障したときでも、その一方のみを容易に交換できるようにしたタッチスイッチ式液晶パネルの取付構造が特開平9-115378号公報に開示されている。この特開平9-115378号公報に開示された構造は、タッチパネルと液晶パネルとを別々の弾性部材によって保持するようにしたことを特徴としている。弾性部材は、ケースにネジ留めなどにより取り付けられる。

【0007】

【発明が解決しようとする課題】表示パネル11やタッチパネル12が破損したり、故障した場合、表示パネル11やタッチパネル12を、新たなパネルに交換する必要があるが、図4に示したパネルの取付構造では、表示パネル11とタッチパネル12とがカバー部材2とフレーム3とに挟まれた状態で固定されているため、表示パネル11やタッチパネル12を交換するには、カバー部材2とフレーム3とを分解しなければならない。そのため、交換作業が面倒であり、修理費が割高になる。また、カバー部材2がタッチパネル12の表面側を挟むため、カバー部材2は、その板厚分だけタッチパネル12よりも突出している。したがって、この取付構造を採用した液晶表示装置などはその突出したカバー部材2の板厚分だけ厚くなり、大型化してしまうという課題がある。

【0008】また、特開平8-179283号公報に開示された液晶表示装置も、液晶パネルが表ケースに貼り付けられたパネル保持部材に押圧されているため、液晶表示装置が大型化するという課題がある。

【0009】さらに、特開平9-115378号公報に開示された液晶パネルの取り付け構造では、弾性部材がケースに固定された状態で液晶表示パネルを交換することになるため、液晶表示パネルの交換作業がやりにくいなどの課題がある。

【0010】本発明は上記課題を解決するためになされたものであり、パネルを容易に交換することができ、装置の薄型化を実現できるパネルの取付構造を提供することを目的とする。

【0011】

【課題を解決するための手段】本発明の第1のパネルの取付構造は、開口部が形成されたカバー部材と、そのカバー部材の開口部内に支持され、パネルを保持するパネル保持部材とを有し、前記カバー部材は、その開口部の内壁にフランジ部が設けられ、前記パネル保持部材は、弾力性のある物質で作られ、前記カバー部材のフランジ部に係止される係止部と、パネルの外周部を挟持した状態で保持する保持部とを有する、ことを特徴とするものである。

【0012】本発明の第2のパネルの取付構造は、開口部が形成されたカバー部材と、そのカバー部材の開口部

内に支持され、パネルを保持するパネル保持部材とを有し、前記カバー部材は、その開口部の内壁にフランジ部が設けられ、前記パネル保持部材は、弾力性のある物質で作られ、開口部を備えた枠部と、その枠部の下部の略中間部分から下方向に設けられた側壁部と、その側壁部の下部から内側方向に延びたフランジ部と、そのフランジ部の先端部から外側方向に折り曲げて形成された係止部とを有し、前記パネル保持部材の枠部の内側部分と、側壁部と、フランジ部とにより前記パネルの外周部を挟持した状態で保持するための断面略コ字状の保持部が形成され、前記パネル保持部材の側壁部と前記カバー部材の開口部の内壁とが当接され、前記パネル保持部材のフランジ部の裏面と前記カバー部材のフランジ部の表面とが当接され、かつ、パネル保持部材のフランジ部の裏面と係止部の表面との間に前記カバー部材のフランジ部の先端部を挟持して、前記パネル保持部材をカバー部材のフランジ部に係止する、ことを特徴とするものである。

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【0013】本発明の第3のパネルの取付構造は、開口部が形成されたカバー部材と、そのカバー部材の開口部内に支持され、パネルを保持するパネル保持部材とを有し、前記カバー部材は、その開口部の内壁にフランジ部が設けられ、前記パネル保持部材は、弾力性のある物質で作られ、パネルの外周部を挟持した状態で保持する保持部を有し、前記パネル保持部材と前記カバー部材のフランジ部とを再剥離可能な接着テープで接着する、ことを特徴とするものである。

【0014】本発明の第4のパネルの取付構造は、開口部が形成されたカバー部材と、そのカバー部材の開口部内に支持され、パネルを保持するパネル保持部材とを有し、前記カバー部材は、その開口部の内壁にフランジ部が設けられ、前記パネル保持部材は、弾力性のある物質で作られ、開口部を備えた枠部と、その枠部の下部の略中間部分から下方向に設けられた側壁部と、その側壁部の下部から内側方向に延びたフランジ部と、を有し、前記パネル保持部材の枠部の内側部分と、側壁部と、フランジ部とにより前記パネルの外周部を挟持した状態で保持するための断面略コ字状の保持部が形成され、前記パネル保持部材のフランジ部の裏面と前記カバー部材のフランジ部の表面とを、再剥離可能な接着テープで接着する、ことを特徴とするものである。

【0015】前記パネル保持部材の枠部の外側部分の裏面と前記カバー部材の上面とが当接するのが好ましい。

【0016】前記パネルは、1枚で又は複数枚を重ね合わせて構成されている。

【0017】前記パネル保持部材は、例えばエラストマ又はシリコンゴムで作られている。

【0018】本発明によれば、パネル保持部材が弾力性のある物質で作られており、パネルをパネル保持部材に取り外し可能に保持できるとともに、そのパネル保持部材をカバー部材に取り外し可能に支持できるので、パネ

ルの交換を容易に行うことができる。

【0019】また、パネルを保持しても、保持部の厚さ分の小さな段差ができるだけであり、パネルの表面とカバー部材の表面とがほぼ同一面となる。

【0020】

【発明の実施の形態】以下、本発明のパネルの取付構造を図1から図3を参照しながら説明する。ただし、従来と同一部分は同一符号を付して説明する。

【0021】図1は、本発明のパネルの取付構造を示す分解斜視図、図2は、本発明のパネルの取付構造を示す正面断面図である。本発明のパネルの取付構造は、例えば液晶表示装置などに適用され、図1に示すように、箱形のケース（図示せず）の上側開口部に嵌め合わされ、開口部20aが形成された枠状のカバー部材20と、そのカバー部材20の開口部20a内に支持され、開口部32が形成された枠状のパネル保持部材30とを有し、パネル保持部材30にパネル10が保持される。

【0022】カバー部材20の開口部20aの内壁には内側方向に延びたフランジ部21が形成されている。

【0023】パネル保持部材30は、例えばエラストマ又はシリコンゴムなどのような弾力性のある物質で作られる。また、パネル保持部材30は、図2に示すように、開口部32を備えた枠部30aと、枠部30aの下部の略中間部分に垂直下方向に設けられた側壁部30bと、その側壁部30bの下部から内側方向に延びたフランジ部30cと、そのフランジ部30cの先端部から外側方向に断面略L字状に折り曲げて形成された係止部30dとを有する。

【0024】パネル保持部材30の枠部30aの内側部分と、側壁部30bと、フランジ部30cとによりパネル10の外周部を挟持するための断面略コ字状の保持部31が形成される。

【0025】パネル保持部材30の側壁部30bとカバー部材20の開口部20aの内壁とが当接される。また、パネル保持部材30のフランジ部30cの裏面とカバー部材20のフランジ部21の表面とが当接される。さらに、パネル保持部材30のフランジ部30cの裏面と係止部30dの表面との間にフランジ部21の先端部を挟持し、これによってパネル保持部材30をカバー部材20のフランジ部21に係止する。

【0026】パネル10は、1枚又は複数枚の表示パネル11とタッチパネル12とから構成される。ただし、パネル10を表示パネル11だけで構成してもよい。また、パネル10を構成するパネルの枚数に応じて、パネル保持部材30の枠部30aとフランジ部30cとの間隔、すなわち側壁部30bの高さを適宜設計する。すなわち、側壁部30bの高さは、パネル10の枚数が少ないときは低く、パネル10の枚数が多くなれば高くなる。

【0027】次に、本発明のパネルの取付構造における

取付方法について説明する。まず、パネル保持部材30は弾力性のある物質で作られているので、枠部30aの内側部分を外側に反った状態に変形して、重ねられた表示パネル11とタッチパネル12をパネル保持部材30の開口部32内に挿入した後、枠部30aの内側部分を元の状態に戻す。これによって、表示パネル11とタッチパネル12の外周部を保持部31内に嵌め込むことができる。

【0028】次いで、パネル保持部材30の係止部30dを内側に反った状態に変形して、パネル保持部材30をカバー部材20の開口部20a内に挿入した後、係止部30dを元の状態に戻して、フランジ部30cの裏面と係止部30dの表面との間にフランジ部21の先端部を挟み込む。これによって、パネル保持部材30はカバー部材20に支持される。また、パネル保持部材30の枠部30aの外側部分の裏面はカバー部材20の上面に当接する。

【0029】表示パネル11及び又はタッチパネル12が破損又は故障して交換する必要がある場合には、まず、係止部30dを内側に反った状態に変形して、カバー部材20のフランジ部21との係止を解いて、パネル保持部材30をカバー部材20から離脱させる。

【0030】次いで、パネル保持部材30の枠部30aの内側部分を外側に反った状態に変形して、パネル10をパネル保持部材30から取り外す。

【0031】次いで、新たなパネル10をパネル保持部材30に保持した後、パネル保持部材30をカバー部材20に支持する。

【0032】図3は、本発明の他の形態のパネルの取付構造を示す正面断面図である。図3に示すように、この形態のパネルの取付構造では、パネル保持部材30は、例えばエラストマ又はシリコンゴムなどのような弾力性のある物質で作られ、開口部32を備えた枠部30aと、その枠部30aの下部の略中間部分から下方向に設けられた側壁部30bと、その側壁部30bの下部から内側方向に延びたフランジ部30cと、を有する。また、パネル保持部材30の枠部30aの内側部分と、側壁部30bと、フランジ部30cとによりパネル10の外周部を挟持するための断面略コ字状の保持部31が形成されている。

【0033】さらに、パネル保持部材30のフランジ部30cの裏面とカバー部材20のフランジ部21の表面とを、再剥離可能な両面接着テープ40で接着する。なお、パネル保持部材30の側壁部30bの裏面とカバー部材20の開口部20aの内壁部表面とを再剥離可能な両面接着テープで接着してもよい。

【0034】この形態のパネルの取付構造によれば、接着テープ40により、パネル保持部材30をカバー部材20の開口部20a内から取り外し可能に支持することができる。また、接着テープ40により、パネル保持部

材 30 の内側に水滴などが浸入することを防止することができる。

【0035】本発明は、上記実施の形態に限定されることはなく、特許請求の範囲に記載された技術的事項の範囲内において、種々の変更が可能である。本発明のパネルの取付構造は、液晶表示装置以外の各種の分野に適用することができる。

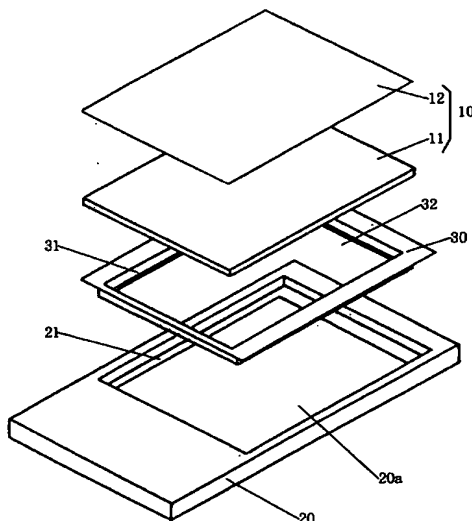
【0036】

【発明の効果】本発明によれば、パネル保持部材が弾力性のある物質で作られており、パネルをパネル保持部材に取り外し可能に保持できるとともに、そのパネル保持部材をカバー部材に取り外し可能に支持できるので、パネルの交換を容易に行うことができる。その結果、本発明のパネルの取付構造を備えた液晶表示装置などの修理費及び製造費の低廉化や生産性の向上を図ることができる。

【0037】また、パネルを保持しても、保持部の厚さ分の小さな段差ができるだけであり、パネルの表面とカバー部材の表面とがほぼ同一面となる。その結果、本発明のパネルの取付構造を備えた液晶表示装置などの薄型

【図面の簡単な説明】

【図 1】



【図 1】本発明のパネルの取付構造を示す分解斜視図である。

【図 2】本発明のパネルの取付構造を示す正面断面図である。

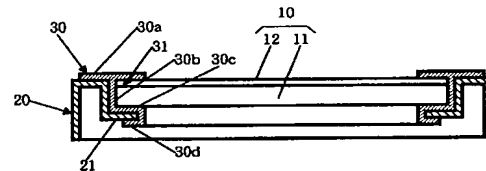
【図 3】本発明の他の形態のパネルの取付構造を示す正面断面図である。

【図 4】従来のパネルの取付構造を示す正面断面図である。

【符号の説明】

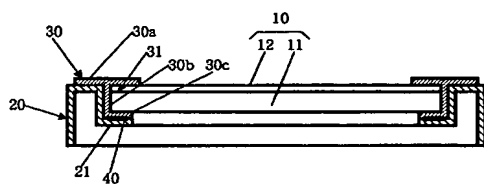
- 10 : パネル
- 20 : カバー部材
- 20a : 開口部
- 21 : フランジ部
- 30 : パネル保持部材
- 30a : 枠部
- 30b : 側壁部
- 30c : フランジ部
- 30d : 係止部
- 31 : 保持部
- 32 : 開口部
- 40 : 接着テープ

【図 2】



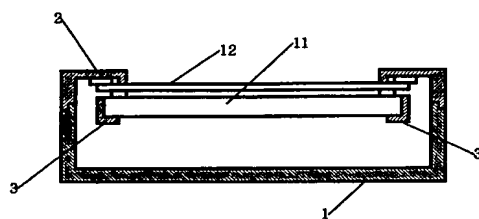
- 10 パネル
- 20 カバー部材
- 21 フランジ部
- 30 パネル保持部材
- 30a 枠部
- 30b 側壁部
- 30c フランジ部
- 30d 係止部
- 31 保持部

【図 3】



40 接着テープ

【図 4】



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**CLAIMS**

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[Claim(s)]

[Claim 1] It is supported in opening of the covering member in which opening was formed, and its covering member, and has a panel attachment component holding a panel. Said covering member It is the attachment structure of the panel which a flange is prepared in the wall of the opening and characterized by what said panel attachment component is made from the elastic matter, and it has for the stop section stopped by the flange of said covering member, and the attaching part held where the periphery section of a panel is pinched.

[Claim 2] It is supported in opening of the covering member in which opening was formed, and its covering member, and has a panel attachment component holding a panel. Said covering member A flange is prepared in the wall of the opening. Said panel attachment component The frame part which was made from the elastic matter and equipped with opening, and the side-attachment-wall section prepared in down from the abbreviation interstitial segment of the lower part of the frame part, It has the flange prolonged in the direction of the inside from the lower part of the side-attachment-wall section, and the stop section bent and formed in the direction of an outside from the point of the flange. The inside part of the frame part of said panel attachment component, The attaching part of the shape of a cross-section abbreviation KO character for holding, where the periphery section of said panel is pinched by the side-attachment-wall section and the flange is formed. The wall of the side-attachment-wall section of said panel attachment component and opening of said covering member is contacted. The rear face of the flange of said panel attachment component and the front face of the flange of said covering member are contacted, and the point of the flange of said covering member is pinched between the rear face of the flange of a panel attachment component, and the front face of the stop section. Attachment structure of the panel characterized by what said panel attachment component is stopped for to the flange of a covering member.

[Claim 3] It is supported in opening of the covering member in which opening was formed, and its covering member, and has a panel attachment component holding a panel. Said covering member A flange is prepared in the wall of the opening. Said panel attachment component Attachment structure of the panel characterized by what it is made from the elastic matter, and has the attaching part held where the periphery section of a panel is pinched, and the flange of said panel attachment component and said covering member is pasted up for with the adhesive tape in which re-exfoliation is possible.

[Claim 4] It is supported in opening of the covering member in which opening was formed, and its covering member, and has a panel attachment component holding a panel. Said covering member A flange is prepared in the wall of the opening. Said panel attachment component The frame part which was made from the elastic matter and equipped with opening, and the side-attachment-wall section prepared in down from the abbreviation interstitial segment of the lower part of the frame part, It has the flange prolonged in the direction of the inside from the lower part of the side-attachment-wall section. The inside part of the frame part of said panel attachment component, The attaching part of the shape of a cross-section abbreviation KO character for holding, where the periphery section of said panel is pinched by the side-attachment-wall section and the flange is formed. Attachment structure of the panel

characterized by what the rear face of the flange of said panel attachment component and the front face of the flange of said covering member are pasted up for with the adhesive tape in which re-exfoliation is possible.

[Claim 5] Attachment structure of the panel according to claim 2 or 4 characterized by the rear face of the lateral part of the frame part of said panel attachment component and the top face of said covering member contacting.

[Claim 6] Said panel is the attachment structure of a panel given in claim 1 thru/or any one term of 5 which the number of is one or is characterized by piling up two or more sheets and being constituted.

[Claim 7] Said panel attachment component is the attachment structure of a panel given in claim 1 thru/or any one term of 6 characterized by being made from an elastomer or silicone rubber.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] About the attachment structure of the panel for attaching panels, such as a touch panel and a display panel, in covering etc., especially, this invention makes exchange of a panel easy and relates to the attachment structure of a panel where thin shape-ization of equipment can be attained.

[0002]

[Description of the Prior Art] In the liquid crystal display, in order to attach panels, such as a touch panel and a display panel, in covering, various attachment structures are proposed from the former.

[0003] Drawing 4 is the transverse-plane sectional view showing the attachment structure of the conventional panel. As shown in drawing 4, the attachment structure of the conventional panel has the case 1 of a cube type, and the covering member 2 of the shape of a frame inserted in top opening of the case 1, and the display panel 11 and touch panel 12 which opened and put the clearance on the rear-face side of the covering member 2 are attached.

[0004] The display panel 11 contains liquid crystal, a switch, etc., and has a certain amount of thickness. A touch panel 12 is the film-like thing which protects a display panel 11, opens a clearance in the front face of a display panel 11, and is put on it. It is fixed where such a display panel 11 and a touch panel 12 are pinched to the frame 3 and the covering member 2 which have been arranged at the rear-face side of the covering member 2.

[0005] Moreover, the liquid crystal display which eased stress added to a liquid crystal panel (display panel), such as a thermal shock, and vibration, an impact, is indicated by JP,8-179283,A. The liquid crystal display indicated by this JP,8-179283,A is characterized by being stuck on the rear face of a front case (covering member) so that the panel attachment component which consists of shock absorbing material, such as silicone rubber, may press the chamfer formed in the periphery section of a liquid crystal panel at least.

[0006] Furthermore, even when only one side of a touch panel and a liquid crystal panel (display panel) breaks down, the attachment structure of a touch switch type liquid crystal panel where it enabled it to exchange only one of these easily is indicated by JP,9-115378,A. Structure indicated by this JP,9-115378,A is characterized by holding a touch panel and a liquid crystal panel by the separate elastic member. An elastic member is attached in a case by a screw stop etc.

[0007]

[Problem(s) to be Solved by the Invention] When a display panel 11 and a touch panel 12 are damaged or it breaks down, it is necessary to exchange a display panel 11 and a touch panel 12 for a new panel but, and with the attachment structure of the panel shown in drawing 4, since the display panel 11 and the touch panel 12 are being fixed in the condition of having been inserted into the covering member 2 and the frame 3, in order to exchange a display panel 11 and a touch panel 12, the covering member 2 and a frame 3 must be decomposed. Therefore, exchange is troublesome and a repair cost becomes comparatively high-priced. Moreover, in order that the covering member 2 may sandwich the front-face side of a touch panel 12, the covering member 2 is projected rather than the touch panel 12 by the board

thickness. Therefore, the liquid crystal display which adopted this attachment structure becomes thick by the board thickness of that projected covering member 2, and has the technical problem that it will enlarge.

[0008] Moreover, since the liquid crystal display indicated by JP,8-179283,A is also pressed by the panel attachment component by which the liquid crystal panel was stuck on the front case, it has the technical problem that a liquid crystal display is enlarged.

[0009] Furthermore, with the installation structure of the liquid crystal panel indicated by JP,9-115378,A, since a liquid crystal display panel will be exchanged where an elastic member is fixed to a case, technical problems -- it is hard to do exchange of a liquid crystal display panel -- occur.

[0010] It is made in order that this invention may solve the above-mentioned technical problem, and panels can be exchanged easily, and it aims at offering the attachment structure of a panel where thin shape-ization of equipment is realizable.

[0011]

[Means for Solving the Problem] The attachment structure of the 1st panel of this invention is supported in opening of the covering member in which opening was formed, and its covering member, and has a panel attachment component holding a panel. Said covering member A flange is prepared in the wall of the opening, and said panel attachment component is made from the elastic matter, and is characterized by what it has for the stop section stopped by the flange of said covering member, and the attaching part held where the periphery section of a panel is pinched.

[0012] The attachment structure of the 2nd panel of this invention is supported in opening of the covering member in which opening was formed, and its covering member, and has a panel attachment component holding a panel. Said covering member A flange is prepared in the wall of the opening. Said panel attachment component The frame part which was made from the elastic matter and equipped with opening, and the side-attachment-wall section prepared in down from the abbreviation interstitial segment of the lower part of the frame part, It has the flange prolonged in the direction of the inside from the lower part of the side-attachment-wall section, and the stop section bent and formed in the direction of an outside from the point of the flange. The inside part of the frame part of said panel attachment component, The attaching part of the shape of a cross-section abbreviation KO character for holding, where the periphery section of said panel is pinched by the side-attachment-wall section and the flange is formed. The wall of the side-attachment-wall section of said panel attachment component and opening of said covering member is contacted. The rear face of the flange of said panel attachment component and the front face of the flange of said covering member are contacted, and the point of the flange of said covering member is pinched between the rear face of the flange of a panel attachment component, and the front face of the stop section. It is characterized by what said panel attachment component is stopped for to the flange of a covering member.

[0013] The attachment structure of the 3rd panel of this invention is supported in opening of the covering member in which opening was formed, and its covering member, and has a panel attachment component holding a panel. Said covering member A flange is prepared in the wall of the opening. Said panel attachment component It is made from the elastic matter, has the attaching part held where the periphery section of a panel is pinched, and is characterized by what the flange of said panel attachment component and said covering member is pasted up for with the adhesive tape in which re-exfoliation is possible.

[0014] The attachment structure of the 4th panel of this invention is supported in opening of the covering member in which opening was formed, and its covering member, and has a panel attachment component holding a panel. Said covering member A flange is prepared in the wall of the opening. Said panel attachment component The frame part which was made from the elastic matter and equipped with opening, and the side-attachment-wall section prepared in down from the abbreviation interstitial segment of the lower part of the frame part, It has the flange prolonged in the direction of the inside from the lower part of the side-attachment-wall section. The inside part of the frame part of said panel attachment component, The attaching part of the shape of a cross-section abbreviation KO character for holding, where the periphery section of said panel is pinched by the side-attachment-wall section and the

flange is formed. It is characterized by what the rear face of the flange of said panel attachment component and the front face of the flange of said covering member are pasted up for with the adhesive tape in which re-exfoliation is possible.

[0015] It is desirable that the rear face of the lateral part of the frame part of said panel attachment component and the top face of said covering member contact.

[0016] There is said one panel, or piles up two or more sheets and is constituted.

[0017] Said panel attachment component is made from an elastomer or silicone rubber.

[0018] Since the panel attachment component can be supported dismountable to a covering member while according to this invention the panel attachment component is made from the elastic matter and can hold a panel dismountable to a panel attachment component, a panel is easily exchangeable.

[0019] Moreover, even if it holds a panel, the small level difference for thickness of an attaching part is only made, and the front face of a panel and the front face of a covering member turn into the same field mostly.

[0020]

[Embodiment of the Invention] Hereafter, the attachment structure of the panel of this invention is explained, referring to drawing 3 from drawing 1. However, the same part as the former attaches and explains the same sign.

[0021] The decomposition perspective view in which drawing 1 shows the attachment structure of the panel of this invention, and drawing 2 are the transverse-plane sectional views showing the attachment structure of the panel of this invention. As for the attachment structure of the panel of this invention, it has the covering member 20 of the shape of a frame in which it was inserted in top opening of the case (not shown) of a cube type, and opening 20a was formed as it was applied to a liquid crystal display etc. and shown in drawing 1, and the frame-like panel attachment component 30 in which it was supported in opening 20a of the covering member 20, and opening 32 was formed, and a panel 10 is held at the panel attachment component 30.

[0022] The flange 21 prolonged in the direction of the inside is formed in the wall of opening 20a of the covering member 20.

[0023] The panel attachment component 30 is made from the matter with resiliency, such as an elastomer or silicone rubber. Moreover, the panel attachment component 30 has 30d of stop sections which bent in the direction of an outside in the shape of cross-section abbreviation for L characters, and were formed in it from the point of frame part 30a equipped with opening 32, side-attachment-wall section 30b prepared in perpendicular down at the abbreviation interstitial segment of the lower part of frame part 30a, flange 30c prolonged in the direction of the inside from the lower part of the side-attachment-wall section 30b, and its flange 30c, as shown in drawing 2.

[0024] The attaching part 31 of the shape of a cross-section abbreviation KO character for pinching the periphery section of a panel 10 by the inside part, side-attachment-wall section 30b, and flange 30c of frame part 30a of the panel attachment component 30 is formed.

[0025] Side-attachment-wall section 30b of the panel attachment component 30 and the wall of opening 20a of the covering member 20 are contacted. Moreover, the rear face of flange 30c of the panel attachment component 30 and the front face of the flange 21 of the covering member 20 are contacted. Furthermore, the point of a flange 21 is pinched between the rear face of flange 30c of the panel attachment component 30, and the front face of 30d of stop sections, and the panel attachment component 30 is stopped to the flange 21 of the covering member 20 by this.

[0026] A panel 10 consists of a display panel 11 of one sheet or two or more sheets, and a touch panel 12. However, a panel 10 may consist of only display panels 11. Moreover, according to the number of sheets of the panel which constitutes a panel 10, spacing of frame part 30a of the panel attachment component 30 and flange 30c, i.e., the height of side-attachment-wall section 30b, is designed suitably. That is, when the height of side-attachment-wall section 30b has little number of sheets of a panel 10, it is low, and it will become high if the number of sheets of a panel 10 increases.

[0027] Next, the means of attachment in the attachment structure of the panel of this invention are explained. First, since the panel attachment component 30 is made from the elastic matter, the inside

part of frame part 30a is deformed into the condition of having curved outside, and after inserting the piled-up display panel 11 and the piled-up touch panel 12 into the opening 32 of the panel attachment component 30, the inside part of frame part 30a is returned to the original condition. By this, the periphery section of a display panel 11 and a touch panel 12 can be inserted in an attaching part 31.

[0028] Subsequently, after transforming 30d of stop sections of the panel attachment component 30 into the condition of having curved inside and inserting the panel attachment component 30 into opening 20a of the covering member 20, 30d of stop sections is returned to the original condition, and the point of a flange 21 is put between the rear face of flange 30c, and the front face of 30d of stop sections. The panel attachment component 30 is supported by the covering member 20 by this. Moreover, the rear face of the lateral part of frame part 30a of the panel attachment component 30 contacts the top face of the covering member 20.

[0029] It reaches display-panel 11, or when it is necessary to damage or break down and a touch panel 12 needs to exchange, 30d of stop sections is first transformed into the condition of having curved inside, a stop with the flange 21 of the covering member 20 is solved, and the panel attachment component 30 is made to secede from the covering member 20.

[0030] Subsequently, the inside part of frame part 30a of the panel attachment component 30 is deformed into the condition of having curved outside, and a panel 10 is removed from the panel attachment component 30.

[0031] Subsequently, after holding the new panel 10 to the panel attachment component 30, the panel attachment component 30 is supported to the covering member 20.

[0032] Drawing 3 is the transverse-plane sectional view showing the attachment structure of the panel of other gestalten of this invention. As shown in drawing 3, with the attachment structure of the panel of this gestalt, the panel attachment component 30 is made from the matter with resiliency, such as an elastomer or silicone rubber, and has frame part 30a equipped with opening 32, side-attachment-wall section 30b prepared in down from the abbreviation interstitial segment of the lower part of that frame part 30a, and flange 30c prolonged in the direction of the inside from the lower part of that side-attachment-wall section 30b. Moreover, the attaching part 31 of the shape of a cross-section abbreviation KO character for pinching the periphery section of a panel 10 by the inside part, side-attachment-wall section 30b, and flange 30c of frame part 30a of the panel attachment component 30 is formed.

[0033] Furthermore, the rear face of flange 30c of the panel attachment component 30 and the front face of the flange 21 of the covering member 20 are pasted up by the double faced adhesive tape 40 in which re-exfoliation is possible. In addition, the rear face of side-attachment-wall section 30b of the panel attachment component 30 and the wall section front face of opening 20a of the covering member 20 may be pasted up by the double faced adhesive tape in which re-exfoliation is possible.

[0034] According to the attachment structure of the panel of this gestalt, the panel attachment component 30 can be supported dismountable out of opening 20a of the covering member 20 with adhesive tape 40. Moreover, it can prevent that waterdrop etc. permeates inside the panel attachment component 30 with adhesive tape 40.

[0035] Various modification is possible for this invention within the limits of the technical matter which is not limited to the gestalt of the above-mentioned implementation and was indicated by the claim. The attachment structure of the panel of this invention is applicable to various kinds of fields other than a liquid crystal display.

[0036]

[Effect of the Invention] Since the panel attachment component can be supported dismountable to a covering member while according to this invention the panel attachment component is made from the elastic matter and can hold a panel dismountable to a panel attachment component, a panel is easily exchangeable. Consequently, cheap-izing of repair costs, such as a liquid crystal display equipped with the attachment structure of the panel of this invention, and a manufacturing cost and improvement in productivity can be aimed at.

[0037] Moreover, even if it holds a panel, the small level difference for thickness of an attaching part is only made, and the front face of a panel and the front face of a covering member turn into the same field

mostly. Consequently, thin-shape-izing of the liquid crystal display equipped with the attachment structure of the panel of this invention etc. and a miniaturization can be attained.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the decomposition perspective view showing the attachment structure of the panel of this invention.

[Drawing 2] It is the transverse-plane sectional view showing the attachment structure of the panel of this invention.

[Drawing 3] It is the transverse-plane sectional view showing the attachment structure of the panel of other gestalten of this invention.

[Drawing 4] It is the transverse-plane sectional view showing the attachment structure of the conventional panel.

[Description of Notations]

10: Panel

20: Covering member

20a: Opening

21: Flange

30: Panel attachment component

30a: Frame part

30b: Side-attachment-wall section

30c: Flange

30d: Stop section

31: Attaching part

32: Opening

40: Adhesive tape

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[Translation done.]